What is claimed is:

1. A method of producing an amplitude modulated communications signal using an amplifier having at least one stage including a three-terminal active device having a signal input terminal, a signal output terminal, and a power supply input terminal, the method comprising:

applying a carrier signal to the signal input terminal; and

applying a power supply input signal to the power supply input terminal, the power supply input signal being derived at least in part from an amplitude modulation signal;

wherein the one stage produces the amplitude modulated communications signal in response to the carrier signal and the amplitude modulation signal, a signal level of the amplitude modulated communications signal at a given instant being proportional to a signal level of the carrier signal and to a signal level of the power supply input signal.

2. The method of Claim 1, wherein the carrier signal is angle modulated.

3. The method of Claim 2, wherein an average output power of the amplitude modulated communications signal is determined at least in part by a signal level of the carrier signal, and amplitude modulation of the amplitude modulated communications signal is separately determined by the amplitude modulation signal.

4. The method of Claim 3, wherein the power supply input signal is derived from both the amplitude modulation signal and a power level control signal.

5. The method of Claim 2, comprising controlling the signal level of the carrier signal using an amplitude varying circuit.

6. The method of Claim 5, comprising, for at least one desired average output power level, controlling the signal level of the carrier signal and the signal level of the power supply input signal such that the one stage is operated in switch mode.

7. The method of Claim 5, wherein the amplifier has multiple series-coupled stages, including the one stage, following the amplitude varying circuit, the method comprising operating each of the multiple stages in triode mode.

8. The method of Claim 7, wherein another stage preceding the one stage includes a three-terminal active device having a signal input terminal, a signal output terminal, and a power supply input terminal, the method comprising producing a power supply input signal for the other stage in accordance with a desired average output power level and applying the same to the power supply input terminal of the other stage.

9. The method of Claim 8, wherein a further stage preceding the one stage includes a three-terminal active device having a signal input terminal, a signal output terminal, and a power supply input terminal, the method comprising applying the power supply input signal for the other stage to the power supply input terminal of the further stage.

10. The method of Claim 7, comprising, for at least one desired average output power level, controlling the signal level of the carrier signal and the signal level of the power supply input signals such that each of the stages is operated in switch mode.

11. The method of Claim 1, wherein a final amplifier stage is coupled to an output network, further comprising maintaining a single configuration of the load network across lowest power and highest power operation.

12. Circuitry for producing an amplitude modulated communications signal, comprising:

an amplifier having at least one stage including a three-terminal active device having a signal input terminal, a signal output terminal, and a power supply input terminal;

means for generating a carrier signal, the carrier signal being applied to the signal input terminal;

means for generating a power supply input signal derived at least in part from an amplitude modulation signal, the power supply input signal being applied to the power supply input terminal;

wherein the one stage produces the amplitude modulated communications signal in response to the carrier signal and the power supply input signal, a signal level of the amplitude modulated communications signal at a given instant being proportional to a signal level of the carrier signal and to a signal level of the power supply input signal.

13. The apparatus of Claim 12, wherein the carrier signal is angle modulated.

14. The apparatus of Claim 13, wherein an average output power of the amplitude modulated communications signal is determined at least in part by a signal level of the carrier signal, and amplitude modulation of the amplitude modulated communications signal is separately determined by the amplitude modulation signal.

15. The apparatus of Claim 14, wherein the power supply input signal is derived from both the amplitude modulation signal and a power level control signal.

16. The apparatus of Claim 13, comprising an amplitude varying circuit responsive to a power level control signal for controlling the signal level of the carrier signal.

17. The apparatus of Claim 16, wherein the amplifier has multiple stages, including the one stage, following the amplitude varying circuit, and wherein, during at least a portion of the time, each of the multiple stages is operated in triode mode.

18. The apparatus of Claim 17, comprising:

another stage preceding the one stage and including a three-terminal active device having a signal input terminal, a signal output terminal, and a power supply input terminal; and

a power supply input signal for the other stage produced in accordance with a desired average output power level and applied to the power supply input terminal of the other stage.

19. The apparatus of Claim 16, wherein for at least one desired average output power level, the signal level of the carrier signal and the signal level of the power supply input signal are controlled such that the one stage is operated in switch mode.

20. The apparatus of Claim 12, comprising a load network coupled to a final amplifier stage is coupled to an output network, wherein a single configuration of the load network is maintained across lowest power and highest power operation.

21. A method of producing an amplitude modulated communications signal using an amplifier having at least one stage including a three-terminal active device having a signal input terminal, a signal output terminal, and a power supply input terminal, the method comprising:

producing a carrier signal;

passing the carrier signal through an amplitude varying block, and controlling the amplitude varying block, taking into account any known non-linearity of the same, to produce a signal input related to a desired average power of the communications signal;

applying the signal input to the signal input terminal;

producing a power supply input signal derived at least in part from an amplitude modulation signal; and

applying the power supply input signal to the power supply input terminal, the one stage producing the amplitude modulated communications signal in response to the carrier signal and the power supply input signal;

whereby amplitude modulation is achieved independently of the amplitude varying block.

22. The method of Claim 21, wherein the power supply input signal is derived from both the amplitude modulation signal and a power level control signal.

23. The method of Claim 22, wherein the amplifier has multiple stages, including the one stage, following the amplitude varying circuit, the method comprising operating each of the multiple stages in triode mode.

24. The method of Claim 23, wherein another stage preceding the final stage includes a three-terminal active device having a signal input terminal, a sig-

nal output terminal, and a power supply input terminal, the method comprising producing a power supply input signal for the other stage in accordance with a desired average output power level and applying the same to the power supply input terminal of the other stage.

25. The method of Claim 23, comprising, for at least one desired average output power level, controlling the signal level of the carrier signal and the signal level of the power supply input signal such that the one stage is operated in switch mode.

26. A communications apparatus comprising:

an amplitude varying circuit receiving a constant-envelope carrier signal and producing a modified constant-envelope carrier signal in response to a power control signal; and

an amplification chain including at least one stage, the amplification chain receiving the modified constant-envelope carrier signal and an amplitude modulation signal and amplifying the modified constant-envelope carrier signal to produce a communications signal having amplitude modulation and having an average output power proportional to a signal level of the modified constant-envelope carrier signal.

27. A method of producing a communications signal, comprising:

modifying a constant-envelope carrier signal in response to a power control signal to produce a modified constant-envelope carrier signal; and

amplifying the modified constant-envelope carrier signal in response to an amplitude modulation signal to produce a communications signal having amplitude modulation and having an average output power proportional to a signal level of the modified constant-envelope carrier signal.

28. Circuitry for producing a communications output signal having complex modulation, comprising:

an amplification chain having at least a final stage including a power source input and a signal input;

control paths whereby the power source input is controlled and the signal input is controlled; and

a control circuit for, through the control paths, controlling the communications output signal over a wide range of average output power levels, including:

during a first period of time, controlling the power source input level and the signal input level to be comparatively high, the final stage being operated in switch mode, thereby causing the communications output signal to have a comparatively high average power level; and

during a second period of time, modulating the power source input level and controlling the power source input level and the signal input level to be comparatively low, the final stage being operated in triode mode, thereby causing the communications output signal to have a comparatively low average power level.

29. The apparatus of Claim 28, wherein the amplification chain has at least two stages each including a power source input and a signal input, wherein the control circuit, during the second period of time, controls the power source input level and the signal input level of both stages to be comparatively low, both stages being operated in triode mode.

30. The apparatus of Claim 28, wherein the controls paths include a phase control path comprising a phase modulator.

31. The apparatus of Claim 30, wherein the phase modulator comprises a voltage controlled oscillator.

32. The apparatus of Claim 31, wherein the control paths include an amplitude control path comprising a variable attenuator for attenuating an output signal of the voltage controlled oscillator.

33. The apparatus of Claim 31, wherein the control paths include an amplitude control path comprising a variable gain amplifier for amplifying an output signal of the voltage controlled oscillator.

34. The apparatus of Claim 28, wherein the control circuit produces an amplitude modulation signal and a power control signal, and the amplitude control path comprises a multiplier circuit for multiplying the amplitude modulation signal and the power control signal.

35. The apparatus of Claim 28, wherein the amplification chain has at least three stages each including a power source input and a signal input, wherein the control circuit, during the second period of time, controls the power source input level and the signal input level of all three stages to be comparatively low, all three stages being operated in triode mode.

36. A method of producing a communications output signal having complex modulation, using an amplification chain having at least a final stage including a power source input and a signal input, the method comprising:

during a first period of time, controlling the power source input level and the signal input level to be comparatively high, the final stage being operated in switch mode, thereby causing the communications output signal to have a comparatively high average power level; and

during a second period of time, modulating the power source input

level and controlling the power source input level and the signal input level to be comparatively low, the final stage being operated in triode mode, thereby causing the communications output signal to have a comparatively low average power level;

whereby the communications output signal is controlled over a wide range of average output power levels.

37. The method of Claim 36, wherein the amplification chain has at least two stages each including a power source input and a signal input, further comprising, during the second period of time, controlling the power source input level and the signal input level of both stages to be comparatively low, both stages being operated in triode mode.

38. The method of Claim 36, wherein the amplification chain has at least three stages each including a power source input and a signal input, further comprising, during the second period of time, controlling the power source input level and the signal input level of all three stages to be comparatively low, all three stages being operated in triode mode.

39. The method of Claim 36, wherein controlling the signal input level comprises applying a variable attenuation factor to an input signal of the amplification chain.

40. The method of Claim 39, further comprising phase modulating the input signal of the amplification chain.

41. The method of Claim 36, further comprising:

producing an amplitude modulation signal and a power control signal; and

multiplying the amplitude modulation signal and the power control

signal to produce the power source input.

42. A method of producing a communications output signal over a wide range of average power levels using an amplification chain having at least a final stage including a power source input and a drive signal input, comprising:

for a first, higher range of power levels, holding the drive signal input strength constant and modulating the power source input;

for a second, lower range of power levels, varying the drive signal input strength and modulating the power source input.

43. The method of Claim 42, wherein, for the higher range of power levels, the final stage is operated in switch mode.

44. The method of Claim 42, wherein, for the lower range of power levels, the final stage is operated in triode mode.

45. The method of Claim 42, wherein varying the drive signal input strength comprises attenuating an output signal of a phase modulator.

46. The method of Claim 42, wherein modulating the power source input comprises multiplying a power control signal by an amplitude modulation signal.

47. The method of Claim 42, wherein the amplification chain has multiple stages and wherein, for the lower range of power levels, the final stage and stages preceding the final stage are operated in triode mode.